THE ROLE OF THE TRANSVAPORISATION AND ALTERATION IN THE GENESIS OF NEOGENE INTRUSIVE HYALOCLASTITES OF HUNGARY

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On the margin of a shallow fluid basalt and basaltic andesite intrusion an interaction between the magma and the wet, loose host sediment may occur which may cause quenching, chilling, or even a non-explosive fragmentation of the uplifting magma. The porosity of the loose sediment easily consumes the pressing energy of the moderately supplied magma columns and veins while arising bidirectional transvaporisation drives away a part of the products of the reactions. The glass-rich autoclasts emplaced as intrusives are autochtonous. Their appearance is not bedded, and exceptionally their transition to the less altered central facies (coarse blocked andesite, breccias, chambers, etc.) of the magma body is also exposed.

A basaltic tuff cone, called Lapos-Hegyestű (Tapolca Basalt Formation) is situated in the South Eastern part of the Kálla Basin (Transdanubia), near Kővágóörs village. In quarries on the slope of the Lapos-Hegyestű there are altered basaltic intrusions into the Upper Pannonian sedimentary basement (Kálla Gravel Formation) (Kozák et al., 1985). These altered intrusions of grey or yellow colour are steeply dipping, and contain halloysite formed by the alteration of the glassy basaltic rock. On the basis of thermoanalytical, X-ray and IR spectroscopic data it can be stated that these very rare, supergenic beds are generated by the effect of the humic acid bearing groundwater. However, the porphyric texture of the original basalt rock and the primary rock forming minerals can be recognised in thin sections.

In the Tardona Hills (North Hungary) there are exhumed small and shallow subvolcanic bodies on the margins of which altered aureoles and hyaloclastites containing andesite fragments occur (Kozák et al., 1998). According to the K-Ar dating of the samples collected from the investigated subvolcanic bodies, the age of the volcanic activity can be estimated to 9.5(±0.8)–13.73(±0.76) Ma BP. There are many places in the host Miocene sediment series (tuffite-sandstone deposits), where intruded andesite dykes can be found. Macroscopic features of these intrusions are similar to those of crystal tuffs, due to the formation of hyaloclastite. The syngenetic nontronitic-bentonitic alteration of the andesite dykes was generated by intensive groundwater migration. On the margins of these dykes limonitic bands can be found, too. Rarely, greenish epidote bearing zones may also occur indicating intensive interaction between the andesitic magma and the host sediment.

References

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